Amplifier Installation Guide

SOHO Wireless Dual-Band Cellular / PCS Amplifier

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Warning: This manual contains important safety and operating information. Please read and follow the instructions in this manual. Failure to do so could be hazardous and result in damage to your amplifier.

Wilson® Electronics, Inc.

30-Day Money-Back Guarantee

All Wilson Electronics products are protected by Wilson's 30-day money-back guarantee. If for any reason the performance of any product is not acceptable, simply return the product directly to the reseller with a dated proof of purchase.

1-Year Warranty

Wilson Electronics amplifiers are warranted for one (1) year against defects in workmanship and / or materials. Warranty cases may be resolved by returning the product directly to the reseller with a dated proof of purchase.

Amplifiers may also be returned directly to the manufacturer at the consumer's expense, with a dated proof of purchase and a Returned Material Authorization (RMA) number supplied by Wilson Electronics. Wilson shall, at its option, either repair or replace the product. Wilson Electronics will pay for delivery of the repaired or replaced product back to the original consumer.

This warranty does not apply to any amplifiers determined by Wilson Electronics to have been subjected to misuse, abuse, neglect, or mishandling that alters or damages physical or electronic properties.

RMA numbers may be obtained by phoning Technical Support at 866-294-1660.

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

Disclaimer: The information provided by Wilson Electronics, Inc. is believed to be complete and accurate. However, no responsibility is assumed by Wilson Electronics, Inc. for any business or personal losses arising from its use, or for any infringements of patents or other rights of third parties that may result from its use.

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Installation Instructions for the Following Wilson Amplifier:

SOHO Wireless Dual-Band Cellular/PCS Amplifier
Model # 271245, Part # 801245
FCC ID: PWO8012SM IC: 4726A-8012SM

The term “IC” before the radio certification number only signifies that Industry Canada technical specifications were met.

Inside this Package

- SOHO wireless amplifier
- AC/DC 6 volt power supply

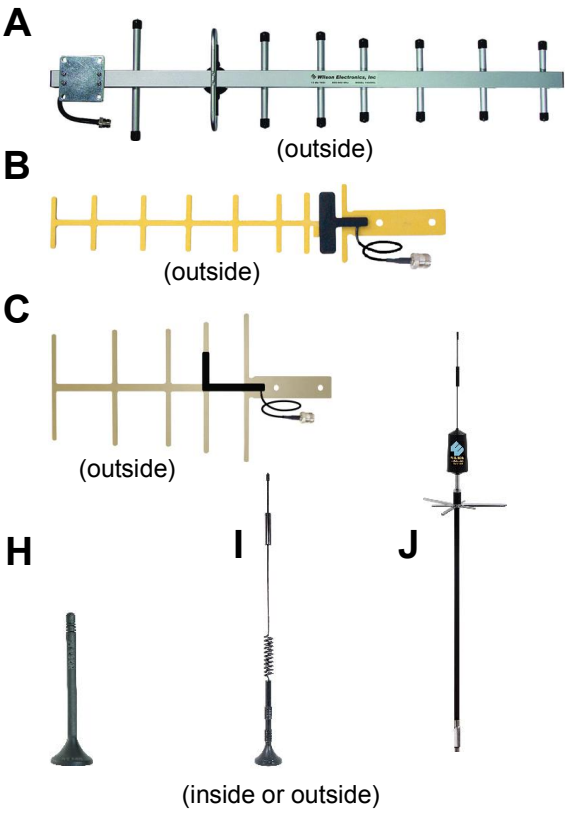
SOHO wireless amplifier

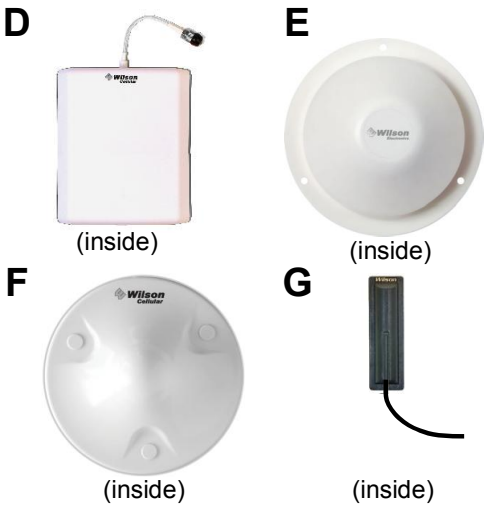
6 V DC plug-in power supply

Additional Required Equipment (sold separately)

- Outside antenna
- Inside antenna
- Antenna coax cable

Antenna Options





A 13 dB 800 MHz Yagi Cellular Antenna (301111)
B 1900 MHz Yagi PCS Antenna (301124)
C 800 MHz Yagi Cellular Antenna (301129)
D Dual-Band Panel Antenna (301135)
E Dual-Polarity Dome Antenna (301123)
F Dual-Band Dome Antenna (301121)
G Low Profile Cellular Antenna (301106)
H Mini Magnet-Mount Antenna (301103)
I Magnet-Mount Antenna (301113)
J Dual-Band Trucker Antenna (301101)

How it Works

Your new Wilson SOHO Wireless Dual-Band Amplifier has been carefully engineered to enhance the performance of your cell phone or cellular data card in small office/home office applications. Its advanced technology is designed to significantly improve voice and data signal quality and reduce disconnects and drop-outs. The amplifier works with two antennas (sold separately): one communicates with the cell site (the outside antenna) and the other communicates with your cell phone or laptop data card (the inside antenna).

The outside antenna will collect the outside signal and send it through a cable to the amplifier. The signal is then boosted and sent through a cable to the inside antenna, which communicates with your cell phone or data card. When the cell phone or data card transmits, the inside antenna picks up the signal and sends it to the amplifier where it is boosted and sent through the outside antenna to the cell site.

Wilson Electronics manufactures a wide variety of antennas and accessories to help you customize your SOHO Wireless Dual-Band Amplifier for your specific application (see page 2). Contact your dealer or visit www.wilsonelectronics.com.

Before Getting Started

This guide will help you properly install Wilson's SOHO Wireless Dual-Band Amplifier. **It is important to read through all of the installation steps for your particular application prior to installing any equipment.** Read through the instructions, visualize where all the equipment will need to be installed and do a soft installation before mounting any equipment. If you do not understand the instructions in full, please contact Wilson Technical Support at 866-294-1660.

Installation Overview

The following steps provide a summary of the amplifier/installation process using a Yagi antenna as the outside antenna and a panel antenna as the inside antenna. However, they are not a substitute for the complete installation instructions on the following pages, which you should read thoroughly. Be sure to read and follow the instructions that come with your specific antennas.

STEP 1 Install the Outside Antenna

Mount the Yagi antenna to a fixed location (such as a pole) on the roof of your building. Be sure it is pointing toward the nearest cell tower and away from where you plan to install the inside antenna. **IMPORTANT: The outside antenna must have a separation of at least 24 inches from all persons during normal operation.**

STEP 2 Install the Inside Antenna

Attach the panel antenna as close as possible to the center of the area where the signal needs to be amplified. Ensure there is a minimum separation of 20 feet between the outside and inside antennas. **IMPORTANT: The inside antenna must have a separation of at least 8 inches from all persons during normal operation.**

STEP 3 Install the Amplifier

Position the amplifier in a well-ventilated location near a power outlet. Attach the antennas to the amplifier using 50-ohm or equivalent coax cable (available in different lengths from Wilson Electronics).

STEP 4 Power up the Amplifier

IMPORTANT! Before connecting the power supply, ensure that both the inside and outside antenna cables are connected. Also ensure that all cell phones and cellular data cards within 20 feet of the inside antenna are turned off. Plug the supplied 6-volt power supply into the amplifier and then into a wall outlet.

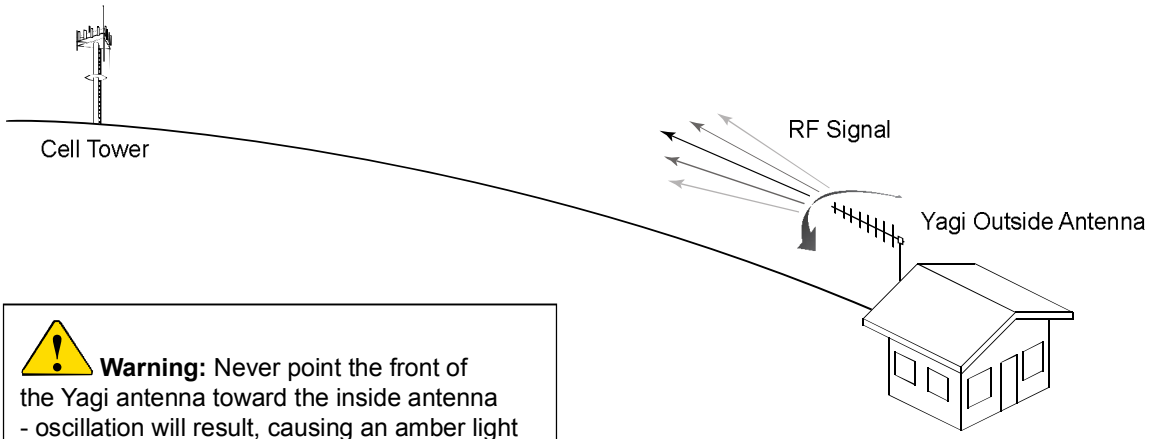
Installing the Outside Antenna

The antenna that communicates with the cell site should be mounted on the outside of the building—this is the preferred location and will give the best performance. Alternatively, locating this antenna inside the building near a window will also work under certain conditions. **IMPORTANT: The outside antenna must have a separation of at least 24 inches from all persons during normal operation.**

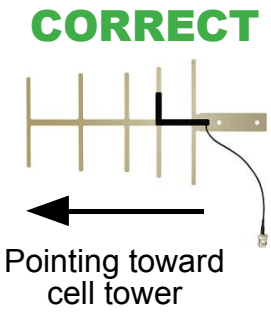
Outdoor Installation

For best results, use a Wilson Yagi antenna that is compatible with the frequency of your cellular service provider. A dual-band trucker antenna will also work. Mount the antenna as high as possible on your building for optimum signal reception and transmission.

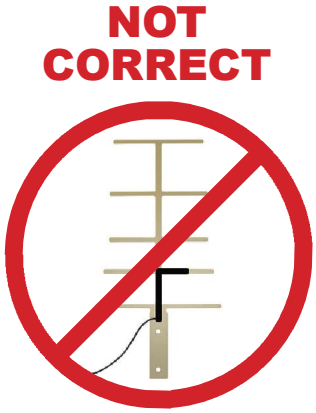
Follow the specific installation instructions included with the outside antenna. Lightning protection is recommended for all outdoor antenna installations. Take extreme care to ensure neither you nor the antenna come in contact with any electrical power lines. Ensure there are three feet of clearance in all directions surrounding the antenna.



Warning: Never point the front of the Yagi antenna toward the inside antenna - oscillation will result, causing an amber light on the amplifier and gain reduction.



Pointing toward cell tower



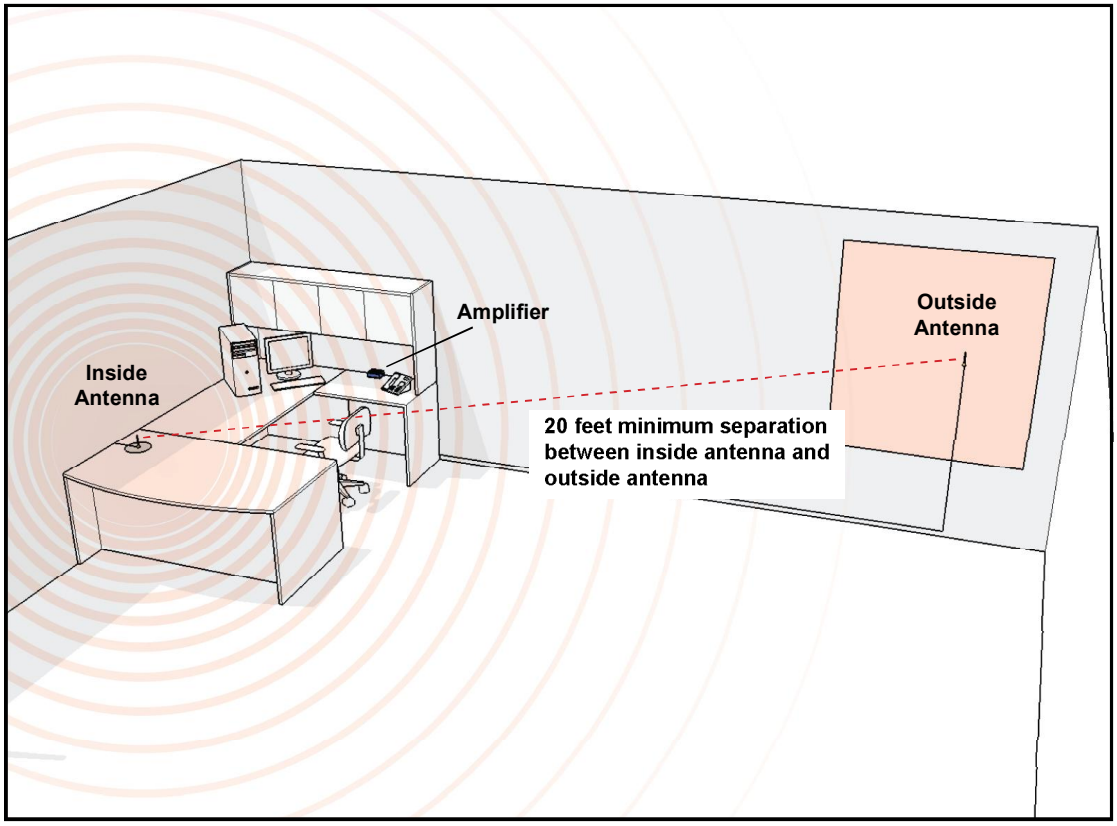
Warning: The outside antenna must be installed with a separation of at least 24 inches from all persons during normal operation.

Alternate Installation

If you choose to install the outside antenna indoors, select a location near a window or glass door where you have the strongest existing cell signal. (See the illustration on page 5.) Follow the specific installation instructions included with the antenna.

Installing the Inside Antenna

The antenna that communicates with your cell phone or cellular data card should be installed in the center of where the signal needs to be amplified. Wilson's magnet-mount, mini magnet-mount, dome and panel antennas will work well with the SOHO Wireless Amplifier.



In the above illustration, Wilson mini magnet-mount antennas are being used for both the outside antenna (on the window) and the inside antenna (on the desk). Follow the specific instructions included with the antennas for your specific application.

Warning: The inside antenna must have a separation distance from all persons that is at least 8 inches.

Warning: Connecting the amplifier directly to the cell phone with use of an adapter will damage the cell phone.

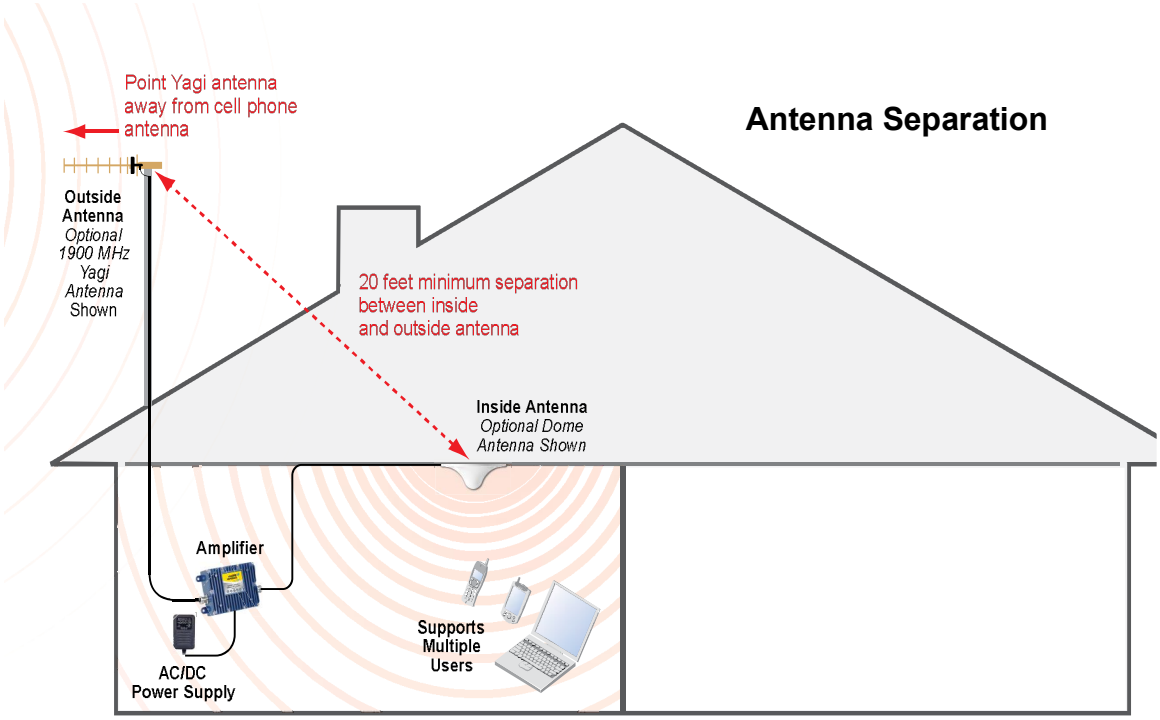
Installing the Amplifier

Select a location to install the amplifier that is away from excessive heat, direct sunlight, moisture and that has proper ventilation. Do not place the amplifier in an air-tight enclosure.

Recommended installation locations are:

- On a desk or table top
- In a bookshelf
- On the floor

In the illustration below, a Wilson Yagi antenna is being used as the outside antenna, and a Wilson dome antenna is being used as the inside antenna.


Antenna Separation
Point Yagi antenna away from cell phone antenna
Outside Antenna
Optional 1900 MHz Yagi Antenna Shown
20 feet minimum separation between inside and outside antenna
Inside Antenna
Optional Dome Antenna Shown
Amplifier
AC/DC Power Supply
Supports Multiple Users

Run the outside antenna cable to the amplifier and attach it to the FME-male connector labeled “outside antenna” on the amplifier. Run the inside antenna cable to the amplifier and attach it to the FME-male connector labeled “inside antenna” on the amplifier.

Note: Be careful when plugging the connectors in so as not to damage the center pin.

Connect the outside antenna to the amplifier with 50-ohm or equivalent coax cable (available in different lengths from Wilson Electronics). Place the inside antenna in the center of the area needing the amplified signal. It is important to have at least 20 feet of separation between the inside and outside antennas. Closer spacing may result in oscillation, which will cause the amplifier to automatically reduce its gain.

Powering up a Wilson Amplifier

1. ***IMPORTANT!*** Ensure that all cell phones and cellular data cards within 20 feet of the inside antenna are turned off.
2. To verify proper installation of the amplifier and antennas, make sure that the distance between the inside and outside antennas is a minimum of 20 feet.
3. If you are using an Yagi antenna as a outside antenna, never point the front of the Yagi toward the inside antenna.
4. Ensure that both the outside antenna coax cable and the inside antenna coax cable are connected to the amplifier before powering up the amplifier.
5. Plug the 6-volt power supply into the amplifier input marked “power” (carefully, to avoid damaging the center pin) and then into a wall outlet.

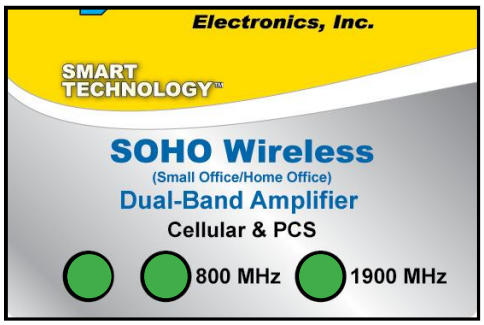
Warning: Use only the power supply provided in this package. Use of a non-Wilson product may damage your equipment.

Warning: Verify that both the outside antenna and the inside antenna are connected to the amplifier before powering up the amplifier.

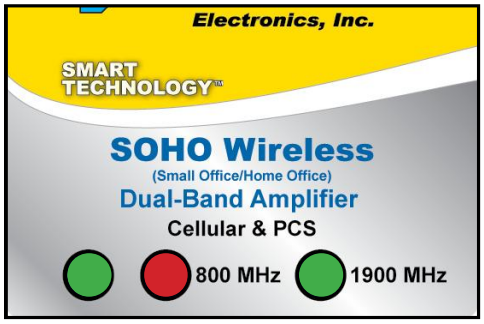
NOTE: The aluminum casing of a Wilson amplifier will adjust very quickly to the ambient temperature of its environment. For example, in the summer, when the attic of a house can easily exceed 100 degrees Fahrenheit, the amplifier temperature may be 10 or more degrees higher. The casing will be hot to the touch. Such high temperatures will not damage the amplifier, nor do they pose a fire risk. As recommended in these instructions, install the amplifier in a location with adequate ventilation. Keep the area free of items that could block air flow to the amplifier.

Understanding the Amplifier Lights

The power light PWR will turn green when the amplifier is successfully powered up.



When the 800 MHz or 1900 MHz lights are lit green, the amplifier is amplifying the outside signal.



If one or both frequency lights turn red, the amplifier is oscillating. To correct this, you must increase the separation between the inside and outside antennas until all lights are green. After increasing the separation, it is necessary to turn the amplifier power off and back on to reset the red lights. If one or both frequency lights remain red, repeat this procedure until both are green.

Warnings and Recommendations

⚠ Warning: A Yagi antenna must always be located so the back or side points to the inside antenna. Never point the front of the Yagi antenna toward the inside antenna – oscillation will result, causing amber light and gain reduction.

⚠ Warning: Connecting the amplifier directly to the cell phone with use of an adapter will damage the cell phone.

⚠ Warning: Connect both the outside and inside antenna cables to the amplifier before powering up the amplifier.

⚠ Warning: Use only the power supply provided in this package. Use of a non-Wilson product may damage your equipment.

⚠ Warning: The outside antenna must have a separation distance from all persons that is at least 24 inches. The inside antenna must have a separation distance from all persons that is at least 8 inches.

Lightning protection is recommended for all in-building installations using an outside antenna.

About Wilson Electronics

Wilson Electronics, Inc. has been a leader in the wireless communications industry for nearly 40 years. The company designs and manufactures amplifiers, antennas and related components that significantly improve cellular telephone signal reception and transmission in a wide variety of applications, both mobile and in-building.

With extensive experience in antenna and amplifier research and design, the company's engineering team uses a state-of-the-art testing laboratory, including an anechoic chamber and network analyzers, to fine-tune antenna designs and performance. For its amplifiers, Wilson uses a double electrically insulated RF enclosure and outside simulators for compliance testing.

Wilson amplifiers feature Smart Technology™ that enables them to automatically adjust their power based on cell site requirements. By preventing oscillation, signal overload and interference with other users, these Smart Technology™ amplifiers improve network cell phone areas without compromising the carrier's system.

All products are engineered and assembled in the company's 50,000-square-foot headquarters in St. George, Utah. Wilson has product dealers in all 50 states as well as Canada and Mexico, Central and South America.

Amplifier Specifications

		Dual Band 800/1900 MHz Specifications	
Model Number / Part Number		271245 / 801245	
Connectors		FME-Male	
Impedance (input/output)		50 ohms	
Dimensions		5.6 x 3.6 x 1.7 inch or 14.2 x 9.1 x 4.4 cm	
Weight		1.44 lbs or 0.65 kg	
Frequency		824-894 MHz / 1850-1990 MHz	
[1]Passband Gain (nominal)			
800 MHz		50 dB (typical) / 55 dB (maximum)	
1900 MHz		50 dB (typical) / 55 dB (maximum)	
[2]20 dB Bandwidth (nominal)			
800 MHz (uplink/downlink)		53.5 MHz / 47.7 MHz	
1900 MHz (uplink/downlink)		86 MHz / 83 MHz	
[3]Power output for single inside (uplink)		800 MHz	1900 MHz
	CDMA	+30.9 dBm	+30.5 dBm
	GSM	+30.0 dBm	+29.7 dBm
	EDGE	+30.4 dBm	+30.3 dBm
	AMPS	+30.2 dBm	
[4]Power output (uplink) for multiple insides:	Number of insides	Maximum Power 800 MHz	 1900 MHz
	2	+25.0 dBm	+24.7 dBm
	3	+21.5 dBm	+21.2 dBm
	4	+19.0 dBm	+18.7 dBm
	5	+17.0 dBm	+16.7 dBm
	6	+15.5 dBm	+15.2 dBm
Power output for single received channel (downlink)		800 MHz	1900 MHz
	CDMA	+10.0 dBm	+9.9 dBm
	GSM	+11.0 dBm	+9.9 dBm
	EDGE	+10.9 dBm	+9.6 dBm
	AMPS	+10.3 dBm	
[4]Power output for multiple received channels (downlink). The maximum power is reduced by the number of channels:	Number of channels	Maximum Power 800 MHz	 1900 MHz
	2	-11.6 dBm	-3.1 dBm
	3	-15.1 dBm	-6.6 dBm
	4	-17.6 dBm	-9.1 dBm
	5	-19.6 dBm	-11.1 dBm
	6	-21.1 dBm	-12.6 dBm
Noise Figure (typical)		3 dB nominal	
Isolation (uplink/downlink)		> 90 dB	
Power Requirements		6 V, .5 A - 1.5 A (depends upon uplink power)	

Notes:
1. Nominal gain is the maximum gain at any frequency in the passband.
2. Nominal bandwidth is the difference between two frequencies that are adjacent to the passband where the amplification is 20 dB lower than the passband amplification. One of the frequencies is lower than the passband and the other is higher.
3. The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.
4. The maximum power for 2 or more simultaneous signals will be reduced by 6 dB every time the number of signals is doubled.

Wilson® Electronics, Inc.
Phone: 866-294-1660 www.wilsonelectronics.com Fax: 435-656-2432